

RV Terminal Centration System



User manual
V 1.0



Knowledge of this manual is required for the operation of the instrument. Please therefore make yourself familiar with the contents of this manual and pay special attention to information concerning the safe operation of the instrument.

The specifications are subject to change; the operating manual is not covered by an update service.

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Caution

Correct operation of the RV Terminal electronic centration system is vital in order to guarantee optimum instrument safety. Please make yourself familiar with the contents of these instructions prior to start-up of the instrument. Please also observe the user manuals of any additional equipment used. Further information is available from our service department or from authorized representatives.

Warning labels and notes

Please pay attention to the safety and general notes contained in the instructions for use and attached to the instrument.



Caution: provides information about risks which can lead to damage to property, personal injury or serious physical harm.




This is a **Note** drawing your attention to important information that will simplify your work.

Notes on instrument safety

- ☐ Production and testing are performed in accordance with German and international regulations.
- ☐ In compliance with Directive 73/23 /EEC, the RV Terminal is a class I instrument.
- ☐ The system meets EMC requirements in accordance with DIN EN 61326.
- ☐ Please observe all applicable accident prevention regulations.
- ☐ Carl Zeiss uses a certified quality management system in accordance with DIN EN ISO 9001 and DIN EN ISO 13485.



Notes on installation and use

- ☐ Class I laser product according to 21 CFR 1040.10.
 - ☐ Protect the instrument from dirt, dust, liquids, extreme temperatures, excessive or direct sunlight.
 - ☐ Use the instrument only in closed rooms.
 - ☐ Condensed water can form on or in the instrument if it is placed in a location with strongly varying temperatures. To avoid damage, you should leave enough time for the humidity to evaporate before you use the instrument.
-  **Note:** If you move the system from a cold to a warm place, or vice versa, wait until the system has adapted to the room temperature before you switch it on.
- ☐ Do not operate the system in explosion-risk areas. Operation in the presence of inflammable anesthetics and volatile solvents such as alcohol, benzoline or similar chemicals is prohibited.
 - ☐ Ambient temperature for the intended use: +10°C...+40°C.
 - ☐ Position the system horizontally. Make sure that the base chosen cannot cause the system to topple.
 - ☐ Immediately pull the power plug if you notice any smoke, sparks or unusual noise on the system. Do not use the system until it has been repaired by our service team.
 - ☐ Do not place any fluid-filled containers on top of the instrument. Make sure that no fluids can seep into the instrument.

- ☐ Do not force electrical connections. If a connector does not fit a socket, check whether they are intended for one another. If any of the connectors are damaged, have our service representative repair them.
- ☐ Do not use mobile phones in the vicinity of the system as these may present a potential hazard for correct function. The malfunctions that may occur depend on a variety of local factors which are totally unforeseeable.
- ☐ Use the system only for the application described.
- ☐ Operate the system using only the accessories included on delivery of the system.
- ☐ Check the photos for correct recognition of pupils (white circles), frame rim (white or green brackets) and marker position (red crosses). If these are not correctly recognized, correct their position or take a new photo, if required.
- ☐ Check the measured data for plausibility and completeness prior to further use.
- ☐ Only use plausible and complete measurements and the data obtained through them.
- ☐ Clean the system only in compliance with the notes in the instructions for use.
- ☐ Modifications and repairs of this system or any systems operated together with this device may only be performed by our service representative or by other authorized persons.
- ☐ We do not accept any liability for damage caused by unauthorized persons tampering with the system. Furthermore, this will forfeit any rights to claim under warranty.
- ☐ The instrument must be opened by our service staff only.

Recommended illumination / installation

- ☐ Make sure that the lighting intensity at the place of installation is at least 400 lux.
- ☐ Do not allow camera or patients to face a window. Avoid extreme differences in contrast.
- ☐ No direct illumination from above –shadows!
- ☐ Ensure that the existing lighting does not cause extensive reflections on the patients' eyes.

Notes about the use of the rechargeable battery in the Smart Display

- ☐ The battery is only intended for use with the Smart Display.
- ☐ Do not disassemble the battery.
- ☐ Do not expose the battery to fire or water.
- ☐ Avoid any short circuit to the battery contacts, as this can result in fire or damage of the battery.
- ☐ If electrolyte liquid has contacted the skin, wash the affected areas thoroughly with soap and water. In the event of contact with the eye, flush the eye with water for 15 minutes and consult a doctor.
- ☐ Do not recharge the battery in ambient temperatures above +45°C.
- ☐ When storing the battery, do not expose it to temperatures above +60°C.

Safe working order

Cleaning / electrical safety

- ❑ Acetone-containing or aggressive solvents must not be used for the cleaning of the RV Terminal or the measuring slide. Other solvents can affect the function of the RV Terminal and result in the loss of warranty. The system must not be opened for cleaning purposes. Cleaning fluids must not enter the system.
- ❑ Do not insert any objects in the ventilation slats or openings of the system, as this can short-circuit the internal components and cause fire or an electric shock.
- ❑ The ventilation slats, particularly those on top, must not be covered in order to avoid overheating.
- ❑ Disconnect the system from the power supply before changing any fuses.



Requirements for operation

Please ensure that the following requirements are met and that this remains the case for further operation of the system:

- ☐ All cables and plugs are in perfect condition.
- ☐ The power cord has been plugged into a power outlet which is properly earthed.
- ☐ The power cord being used is the one designed for use with this instrument.

Before every use

- ☐ Make sure that all specified "Requirements for operation" are fulfilled.
- ☐ Do not cover any ventilation openings.

After use of the system

Switch the system off via the On/Off key or shut it down via the software if it is not to be used for a prolonged period of time, e.g. overnight.

Intended use

The RV Terminal electronic centration system is a high-performance instrument for measuring the centration data of spectacle lenses and for lens and frame consultation.

- ☐ If the user decides to use the system for any other purpose than that specified, he/she accepts full responsibility for the consequences.
- ☐ Please keep the instructions for use easily accessible at all times.

The RV Terminal is a centration system for determining the optimum positioning of spectacle lenses in front of the patient's eyes during wear, with the fitted frame in position. The operating software and the patient photos are shown on a display and control element. Three system versions can be used for measurement:

- a) system mounted on a table (measurement is made in a sitting position, distance between system front and measuring slide lies between 70 and 150 cm)
- b) system mounted beside a table (measurement is made in a sitting position, distance between system front and measuring slide lies between 70 and 150 cm)
- c) stand-alone system (measurement is made in a standing position, distance between system front and measuring slide lies between 70 and 150 cm)

RV Terminal is intended for mounting on the floor or the optometrist's consultation table.

Delivery package

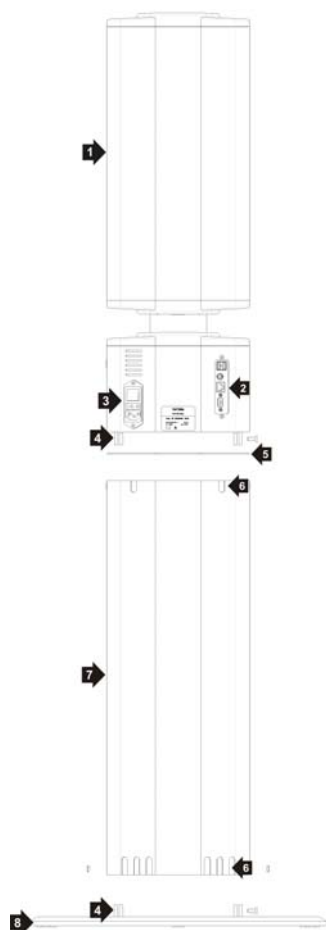
- ☐ RV Terminal, specified version
- ☐ Measuring slide in storage container
- ☐ Standard power cable
- ☐ User manual
- ☐ Circular level
- ☐ Floor markers for stand-alone version only
- ☐ Torx and fork wrench – only for table-mounted and stand-alone systems.

Optional:

- ☐ Software for profile photo measurement
- ☐ Software for lens and frame consultation (available from spring 2005)
- ☐ Smart Display with docking station and pen
- ☐ LCD flat-screen monitor
- ☐ Logitech cordless mouse, optical USB
- ☐ Color printer HP Deskjet 3650c or higher, with USB cable
- ☐ Network cable

Connections

Rear of the system



1. Function head
2. Connectors
3. Power switch, fuse, power connector
4. Connecting elements with covers
5. Joint
6. Inlets and outlets for internal cable routing
7. Base
8. Metal plate with feet and cable openings

Fig. 1

Connectors on the rear

From top left to bottom right

left

1. Power switch
2. Fuse
3. Power socket with standard power cable

right

4. Internal USB connector for cordless mouse or – with Smart Display version: WLAN USB pen
5. External USB connector for the specified printer
6. PS2 connector for the keyboard
7. Network connector for connection to PC or network hub
8. VGA output for connection with monitor

9. Type label



Fig. 2 Connectors

On/Off key

Front right

1. On/Off key
2. Indicator light for operating status



Fig. 3 On/Off key

Removal from the transport packaging

Please read the following points carefully and proceed in the order given:

- A Take the system and the peripheral components carefully out of the transport packaging and remove the packaging.
- B For the table-mounted version, position the table horizontally using the circular level contained in the package.

Mounting



Fig. 4 Opened screws/nuts

- C For the system mounted beside the table and the stand-alone system, position the metal plate horizontally with the aid of the six feet. For this purpose, a fork wrench and a circular level are contained in the packaging.
- D Route the cables to the outside or in a downward direction through the instrument base.
- E Open the screws and nuts as far as possible



- F Carefully position the system base on the metal plate, using the pegs / screws and nuts as adjusting aids



Caution: Mind your fingers!



- G Connect the metal plate with the base using the screws (a torx wrench is contained in the packaging)

- H Guide the cables out of the rear top of the instrument base



Caution: Make sure that none of the cables is crushed!



- I Combine the function head with the instrument base using the pegs as adjusting aids. It is recommended to seek the assistance of another person here.



Caution: Mind your fingers!



Caution: Make sure that none of the cables is crushed!



- J Connect the system base with the function head using the screws



Caution: Make sure that none of the cables is crushed!


- K Connect the cables to the appropriate connectors (see Fig. 2, Connectors).

- L Cover the connection screws with the caps supplied.

- M Fix the supplied floor markers on the floor with double-sided tape and position them axially in front of the system, at a distance of 80-140 cm, with their arrows pointing to the viewing window (only applicable for stand-alone system).

Smart Display

Functions, status displays and connections

 **Note:** The components important for operation of the RV Terminal are written in **bold print**.

1. **Status LED: WLAN connection**
2. *Loudspeaker*
3. *Mouse button, right*
4. *Mouse button, left*
5. **Power supply status LED**
6. **Switch: On/Off**
7. *Keyboard: display on/off*
8. *Access to Web browser*
9. *Cursor direction keys*
10. *Microphone*

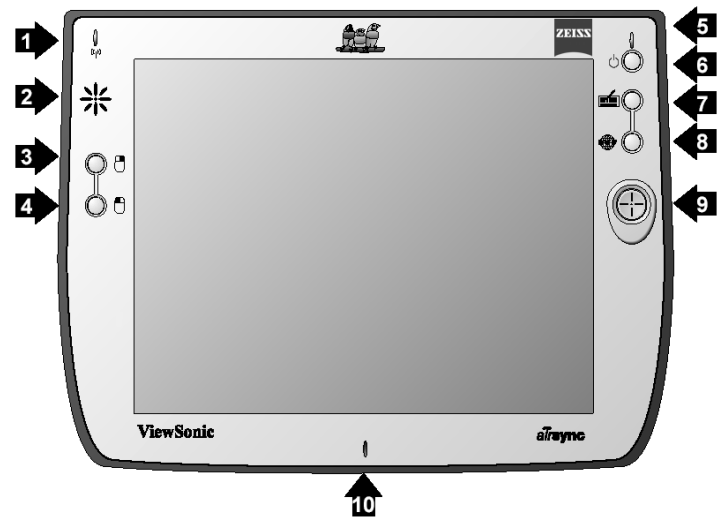


Fig. 5 Front of the Smart Display

1. *Microphone connector*
2. *Headphone connector*
3. **Power connection for power adapter**
4. **Battery compartment**
5. **Pen in compartment**
6. **Openings for attaching the pen cord**
7. *USB type A connector (two)*
8. **Reset button**
9. *PCMCIA ejection button*
10. *PCMCIA slot*
11. *USB Mini-B*
12. *Mini VGA connector*
13. *Attachment device for safety lock*
14. **Connector for docking station**
15. **Battery lock**

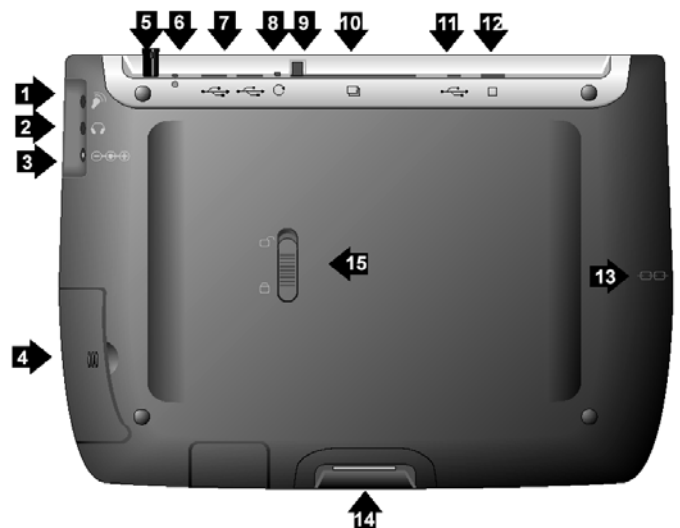


Fig. 6 Rear of the Smart Display

Pen

Fig. 7 Pen



Fig. 8 Pen with cord

Most functions of the RV Terminal require the pen. The pen also enables you to reset the Smart Display.



Note: Store the pen in its compartment when you are not using it. You can also use the cord to prevent the pen from getting lost or misplaced.

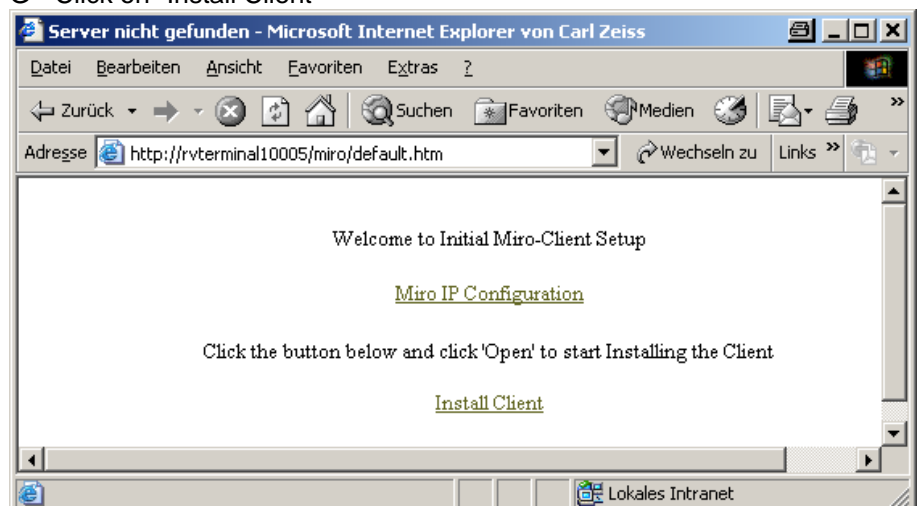
Network

The RV Terminal software is network-compatible; you can directly connect the system to your PC via a crosslinked network cable, or to your network hub via a standard network cable. This enables you to perform several evaluations simultaneously.

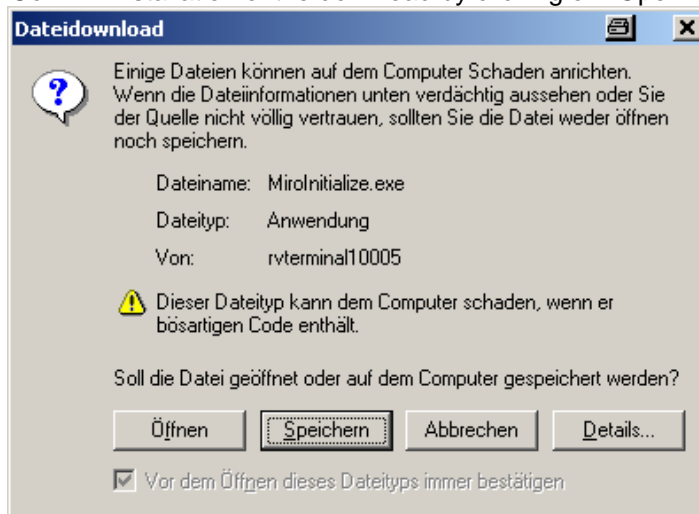
It is possible to use monitor / mouse or Smart Display and PCs in the network. The parallel use of Smart display and monitor is not possible.

Procedure for integration into a network:

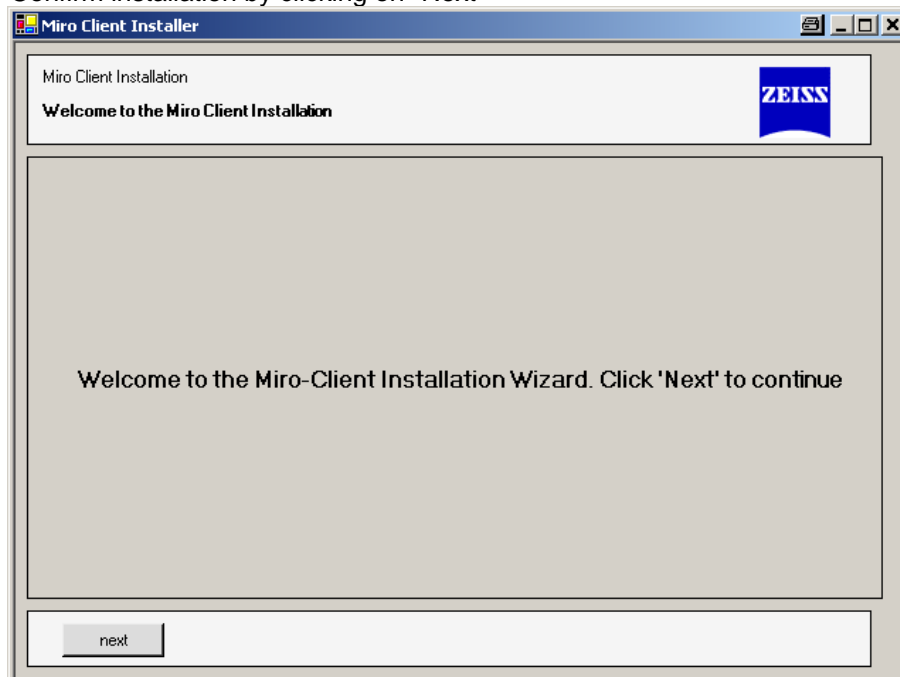
- A Integration into a network requires administrator rights for the evaluation PC (Client) to be connected and the Internet Explorer 5.01 or higher. MS operating systems from Win98 are supported.
- B Connect the RV Terminal to the network hub via a network cable – or use a crosslinked network cable for direct connection to a PC.
- C Start the RV Terminal and wait until the green operating status LED lights up on the On/Off switch.
- D Start the Internet Explorer on the evaluation PC to be connected.
- E If your network features DHCP, enter the following text in the address line: <http://RVTerminal10005/miro/default.htm> ; instead of "RVTerminal10005", please enter the serial number of your system in the following format: RVTxxxx-xxx-xxxx
- F For a home network, please enter the number 192.168.0.72 instead of the serial number. This means that the following URL must be entered: <http://192.168.0.72/miro/default>.
- G Click on "Install Client"



- H Confirm installation of the download by clicking on "Open"

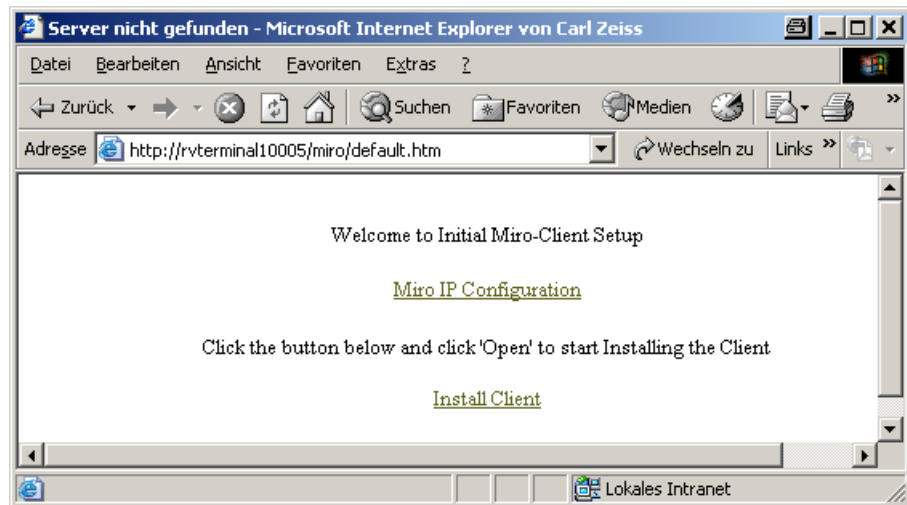


- I Confirm installation by clicking on "Next"

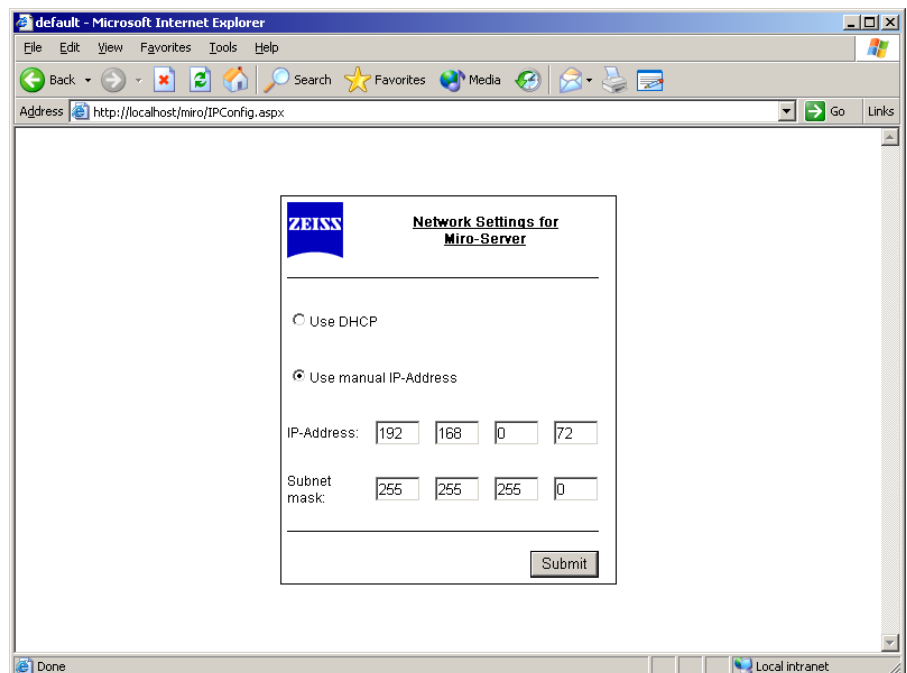


- J Wait until any software required has been installed. Depending on the operating system, this can take some time.
- K To start the software (Client) from the RV Terminal in the future, go to "Start" – "Programs" – "RV Terminal" "RV Terminal Starter".

Procedure for IP change (if required)



If you want to change the IP address of the RVT, click on the "Miro IP Configuration" link, which will take you to the following site.



You can change the IP here and set it by pressing the "Submit" button.

Prior to start-up

Caution

Make absolutely sure to read the "Instrument safety" chapter before you start operating the instrument.



Smart display

The Smart Display can be operated with a power supply unit or a rechargeable battery.

A fully charged battery enables operation for up to 4 hours.



Note: We would recommend you to use the Smart Display in the docking station.

Charging the battery

Approximately 2 hours are required for recharging when the Smart Display is switched off, and about 4 hours when it is running.

Please charge the battery for at least 5 hours before you use it for the first time, as the battery's service life will otherwise be reduced.



Note: To utilize the full performance of the lithium-ion battery, 3 complete charge/discharge cycles should be run. If possible, charge the battery while the Smart Display is switched off.

Meaning of the status LED of the power supply

The status LED is positioned in the upper right corner of the Smart Display and shows the current charge status:

In the power unit mode or in connection with the docking station

Off	The Smart Display is switched off.
Green	Battery is charged; power supplied via the power unit.
Green blinking	Battery is being charged; power supplied via the power unit.

In the battery mode

Off	The Smart Display is switched off.
Green	Charge level OK
Yellow	Low charge level
Yellow blinking	Charge level critically low

Storage

If you do not use the Smart Display in the battery mode every day, connect it directly to the mains via the power unit or the docking station. Remove the battery if you want to store the instrument for a longer period of time. Otherwise, there is a risk of the battery running down completely. This can result in damage to the battery and make recharging impossible.



Switching on the peripherals

Monitor / Mouse

As an alternative to the Smart display, you can also directly connect a monitor with VGA connector and a mouse with USB connector and use them as a display / control element. We would recommend using an LCD with a large image angle to allow the patient to actively experience the centration procedure. Recommended mouse: Cordless Optical mouse from Logitech, with USB connector, Cat. No. 931172-0914 (Logitech).

We are unable to guarantee the functionality of other mouse models.

On system start-up, switch on the monitor first and then the RV Terminal. When the RV Terminal has finished the start-up procedure (green status LED of On/Off switch lights up, application software appears on the monitor), please switch on the mouse. If there is no connection between the mouse and the system, disconnect the USB stick of the mouse from the system for a brief moment.

Smart display

When starting the system, first start up the RV Terminal completely (green status LED of On/Off switch lights up) before you start the Smart Display. Then click on the "Connect to RVT" button on the Smart Display to connect the Smart Display with the RV Terminal.

Switching on the RV Terminal

Connect the RV Terminal to the mains via the power switch on the rear of the unit above the mains connector. Then switch on the RV Terminal by pressing the On/Off switch. The program is then loaded automatically. This takes about 2.5 minutes. As soon as the starting procedure is finished, the starting image is displayed on the monitor and the green LED below the power switch lights up.



Note: To ensure rapid availability, we recommend switching the RV Terminal on/off only once a day.

Network

After the start of the RVT, the software can be started on the customer PC via "Start" – "Programs" – "RV Terminal" – "RV Terminal Starter", as described above. If the RVT cannot be reached because it is not switched on, a message will be displayed.

Use of the measuring slide



Fig. 9 Open the measuring slide

Fit the selected frame in its final form on the patient's face. The ear and nose fit and the horizontal orientation in particular must no longer be changed when the frames are glazed in the lab.

Take the blue levers of the measuring slide between your right thumb and index finger and open the slide.

Insert the frame into the top mounting grooves with your left hand. Close the measuring slide by slowly releasing the pressure of your right thumb and index finger. The frame engages in the lower mounting grooves.



Use the small indentation under the nose to check the center position of the measuring slide on the frame.

Fig. 10 Close measuring slide

Positioning the patient

- a) system mounted on and beside the table: measurement is made in seated position
 - b) Stand-alone system: measurement is made in standing position
- ☐ Demonstrate to the patient how to adopt a relaxed position in front of the system. Ensure that the patient's head and body are in a natural posture.
 - ☐ For an optimum profile photo, ask the patient to turn his/her body 90° to the right or left.
 - ☐ To make this easier for the patient, we would recommend that you attach a fixation aid at average eye level.

Help function

- ☐ If you move the mouse / pen to the right edge of the software interface, a window appears from the right providing information and notes about the current interface, e.g. on operation.



Warnings

- ☐ The system must be opened by trained service staff only. Never open the RV Terminal, as this can result in the immediate loss of warranty. Carl Zeiss will not be liable for any damage caused by opening the system.
- ☐ The RV Terminal must never be connected to the mains when it is opened or defective.

Troubleshooting

There may be various reasons for malfunctions.
Please check whether

- ☐ the RV Terminal has been connected to the mains supply;
- ☐ the fuses of your mains supply are working properly;
- ☐ the power fuses of the RV Terminal work properly.
- ☐ **Only for network connection:** the network connections must be OK, and the hub or server must be switched on.
- ☐ **Only for Smart Display:** network connection to RV Terminal exists

Meaning of the status LEDs for the network connection

The LED is positioned in the upper left corner of the Smart Display and shows the quality of the network connection:

Off	No signal, no connection
Green	Good signal quality
Yellow blinking	Poor signal quality

Changing the line fuse

Above the power cable connection you will find a fuse compartment with two fuses (T3, 15A L 250 V 5x20 IEC127-2/3). To change them, proceed as follows:

- A Switch off the RV Terminal and remove the power cable.
- B Pull out the fuse holder with a screwdriver.
- C Replace the defective fuses in the fuse holder.
- Caution:** Only use spare fuses of the same type.
- D Press the fuse holder fully into the unit.
- E Connect the power cable and switch RV Terminal on again.



Changing the battery of the Smart Display



Your Smart display contains a lithium-ion battery.

Caution: Replace the battery only with a battery of the same type (airpanel V110 series battery)

1. Open the lock of the battery compartment.
2. Remove the old battery.
3. Insert the new battery.
4. Lock the battery compartment to prevent the battery from accidentally falling out.

Do not dispose of the old battery as normal waste.

In most countries, the address of the nearest collecting point for used batteries is available from your local waste disposal company.

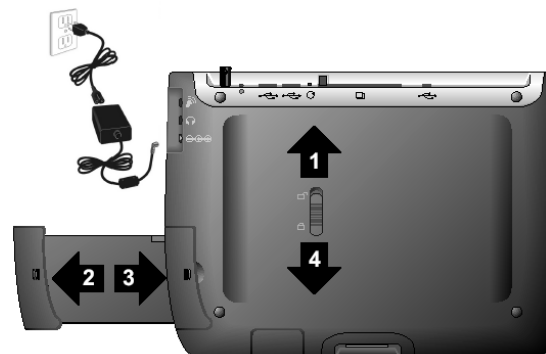


Fig. 11 Changing the battery

Cleaning and Care



Caution

If you want to clean the instrument, switch off RV Terminal and the Smart Display and pull out the power plug.

- ☐ You can clean the glass front of RV Terminal with a soft, moist cloth. If required, use a standard glass-cleaning agent.
- ☐ Clean the Smart Display using a dry or slightly moist microfiber cloth. Never use any cleaning agents that contain ammonia or alcohol, since these can damage the Smart display and the housing.

Software updates

Software updates can be installed via a USB Memory Stick.

- A Insert the USB Memory Stick in the instrument
- B Switch on RV Terminal.
- C The software update is recognized automatically and installed
- D On conclusion of the installation, a message appears on the test field, and the instrument is restarted automatically after 10 seconds.
- E During this time, remove the USB Memory Stick.
- F **Only for Smart Display:** To implement the changes also on the control unit, the Smart Display must be reset. To do this, press the reset knob with the tip of the pen.

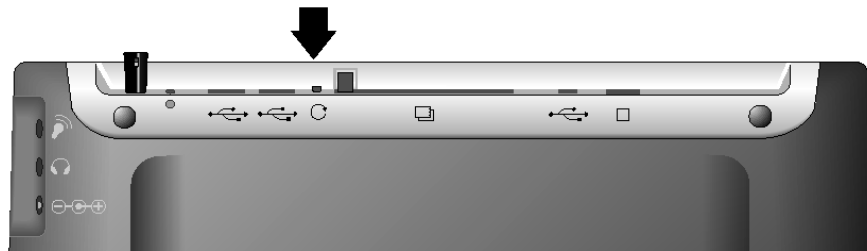


Fig. 12 Reset knob of the Smart Display

Service telephone

Should you have any technical problems with your RV Terminal, you can get help from your local sales agency via the service telephone.

Telephone: ++XXX or ++XXX

Telefax: ++XXX

Email: XXX

Warranty

The warranty period for the installed components is 1 year.

Mains voltage	90-240 V AC \pm 10 %, 50 ... 60 Hz
Power	160 VA
Ambient conditions for the intended use	Temperature: +10 °C ... +40 °C Humidity: 30 %...90 % (no condensation)
Transport and storage conditions (in original packaging)	Temperature: -25 °C ... +60 °C Humidity: 10 % ... 100 % (no condensation)
Loudspeaker connection (Smart Display)	3.5 mm stereo connector
Dimensions (height x width x depth)	System mounted on table: 51.7 x 24.0 x 28.0 cm System mounted beside table: incl. metal plate 124.7 x 60 x 50 cm Stand-alone system: incl. metal plate 149.5 x 60 x 50 cm
Weight of system	on table: 16.0 kg beside table: 31.8 kg stand-alone: 36.5 kg
Power fuses	T3,15A L 250V 5x20 IEC127-2/3

Subject to change in the course of further development.

Standards and Regulations

The RV Terminal meets the requirements of the following standards and regulations:

Standard	Year	Contents
DIN EN 60601-1-1	08/2002	Medical Electrical Equipment - Part 1-1: General Requirements for Safety.; Collateral Standard: Regulations for the Safety of Medical Electrical Equipment
DIN EN ISO 14971	03/2001	Application of risk management to medical devices
Laser Class I in acc. with DIN EN60825	October 2003	

Low voltage directive

The RV Terminal meets the requirements of EC low voltage directive 73/72/EEC and its German equivalent, 1. GSGV – 1. Verordnung zum Gerätesicherheitsgesetz.



Hier kommt die Konformitätserklärung von A-QS/Frau Pflanz hinein
Hier kommt noch die declaration of conformity für Relaxed Vision von A-Q/Frau Pflanz hinein.



Z E R T I F I K A T

Die
**DQS Deutsche Gesellschaft zur Zertifizierung
von Managementsystemen mbH**

bescheinigt hiermit, dass das Unternehmen

Carl Zeiss

Geschäftsbereich Augenoptik
Werk Aalen
D-73430 Aalen

für den Geltungsbereich

Entwicklung, Herstellung und Vertrieb von Brillengläsern,
vergrößernden Sehhilfen, Schutzbrillen und augenoptischen Geräten

ein
Qualitätsmanagementsystem
eingeführt hat und anwendet.

Durch ein Audit, dokumentiert in einem Bericht, wurde der
Nachweis erbracht, dass dieses Qualitätsmanagementsystem
die Forderungen der folgenden Norm erfüllt:

DIN EN ISO 9001 : 2000

Ausgabe Dezember 2000

Dieses Zertifikat ist gültig bis	2005-03-19
Zertifikat-Registrier-Nr.:	231632 QM
Auszug aus Zertifikat-Registrier-Nr.	015724 QM
Frankfurt am Main, Berlin	2002-03-20

Dr.-Ing. K. Petrick

GESCHÄFTSFÜHRER

Dipl.-Ing. S. Heinloth

Geschäftsstellen: D-60433 Frankfurt am Main, August-Schanz-Straße 21
D-10787 Berlin, Burggrafenstraße 6

DQS is member of:



THE INTERNATIONAL CERTIFICATION NETWORK





C E R T I F I C A T E

DQS Deutsche Gesellschaft zur Zertifizierung von Managementsystemen mbH

hereby certifies that the company

Carl Zeiss

Ophthalmic Products Division
Plant Aalen
D-73430 Aalen

for the scope

Designing, Manufacturing and Distribution of Spectacle Lenses,
Low Vision Aids, Protective Eyewear and Ophthalmic Instruments

has implemented and maintains a

Quality Management System.

An audit, documented in a report, has verified that this
quality management system fulfills the requirements
of the following standard:

DIN EN ISO 9001 : 2000

December 2000 edition

This certificate is valid until	2005-03-19
Certificate Registration No.:	231632 QM
Excerpt from Certificate Registration No.	015724 QM
Frankfurt am Main, Berlin	2002-03-20

Dr.-Ing. K. Petrick

MANAGING DIRECTORS

Dipl.-Ing. S. Heinloth

Offices: D-60433 Frankfurt am Main, August-Schanz-Straße 21
D-10787 Berlin, Burggrafenstraße 6

DQS is member of:





Carl Zeiss AG
Geschäftsbereich Augenoptik
D – 73428 Aalen
Germany
www.zeiss.de/opto
optics@zeiss.de